IHRA Side Impact Working Group Status Report

May 2002

IHRA

DOTARS

Outline

- 1st term outcome
- New Terms of Reference
- Timeframe of work
- Liaison with other groups
- Summary of progress over past year
- Future research

DOTARS

IHRA

First Term Outcome

- 4-part test procedure required:
  - Mobile Deformable Barrier to vehicle test
  - Vehicle to pole test
  - Out-of-position side airbag evaluation
  - Sub-systems head impact test

DOTARS

IHRA

Meetings

- 12th - 14/15 June 2001 - Lyon
- 13th - 7/8 December 2001 - Geneva
- 14th - 21/22 February 2002 - Melbourne
- Minutes on website - www-ihra.nhtsa.dot.gov

DOTARS

IHRA

New Terms of Reference

- Objective the same
  - Co-ordinate research worldwide to support the development of future side impact test procedure(s) to maximise harmonisation with the objective of enhancing safety in real world side crashes.

DOTARS

IHRA

Scope

- Coordinate research to draft and evaluate test procedures identified in its 1st term
- Coordinate research to examine the feasibility of improving side impact protection for occupants on the non-struck side and develop a test procedure to evaluate such protection.

DOTARS

IHRA

SIWG Activities

- Review new real world crash data to prioritise injury mechanisms and identify associated crash conditions taking into account likely future trends.
- Take into account the need to protect both front seat and rear seat(s) adult and child occupants.

DOTARS

IHRA

SIWG Activities

- Interact with the IHRA Biomechanics Working Group to monitor the development of harmonised injury criteria.
- Interact with the IHRA offset frontal and vehicle compatibility working groups to ensure solutions in one area do not degrade safety in another.

DOTARS

IHRA

SIWG Activities

- Monitor and, as appropriate, provide input to the development of WorldSID and any other side impact dummy.
- Determine the greatest degree of harmonisation feasible and the design and vehicle safety performance implications of adopting different levels of test severity or the worst t case condition.

DOTARS

IHRA

SIWG Activities

- Coordinate the evaluation of proposed test procedures subject to availability of test dummies and injury criteria.

DOTARS

IHRA

Timeframe

- Target date for draft final proposal of test procedure(s) is 2003 ESV
- Target date for final proposal of test procedure(s) is 2005 ESV with validation in the intervening 2 years.

DOTARS

IHRA

Liaison with WP29

- Prior to the 13th meeting of the SIWG in December 2001, the group's 1st term work was presented to the Expert Group on Passive Safety (GRSP) in Geneva.

DOTARS

IHRA

WorldSID Progress

- JAMA Evaluation and NHTSA testing is scheduled for the 2nd and 3rd quarters of 2002
- Pre-production prototypes available beginning October 2002

DOTARS

IHRA

WorldSID Progress

- Worldwide regulatory bodies, OEMs, suppliers, and researchers to evaluate pre-production dummies
- Production dummies available 1st Quarter 2004
- 50th %ile male dummy is regulation-ready 1st Quarter 2004

DOTARS

IHRA

WorldSID Progress

- 50% male WorldSID regulation ready for pole test
- SIWG requested ISO for development of 5% female WorldSID
- May have to list SID IIs as dummy to be used for MDB test
  - unless IHRA BWG advised otherwise

DOTARS

IHRA

Accident Studies

- US fatal data shows struck vehicle is predominantly a passenger car and that pickups and SUVs were over-represented as striking vehicles.
- Crabbed and perpendicular impacts were equally common in US.

DOTARS

IHRA

Fleet Studies

- Passenger compartment size tapers off to limiting against wheelbase
- Wheelbase alone may not be good surrogate for compartment size
- H-point location relative to wheelbase better
- Worse case structural interaction also to be considered

DOTARS

IHRA

Drafting Test Procedures

- Mobile Deformable Barrier Test - Australia
- Pole Impact Test - USA
- Interior Headform Test - EEVC
- OOP and airbag interaction Test - Canada

DOTARS

IHRA

Mobile Deformable Barrier Test

- Remains most challenging task for the group
- If IIHS proceeds with publishing consumer results using its new MDB, may become de facto regulation in North America
- EEVC also working on new MDB face
  - to mirror intrusion profiles seen in real world European crashes

DOTARS

IHRA

MDB Test - Agreed Points

- Longitudinal impact velocity component of 50 km/h
- Small adult female driver dummy.
- Seatbelts applied

DOTARS

IHRA

MDB Test - Main Issues

- Need for rear dummy?
- Crabbed or perpendicular test?
- Barrier element - homogeneous or not?
- Stiffness distribution of barrier element?
- Mass of trolley?
- Ground clearance of barrier?
- Non-struck side test?

DOTARS

IHRA

MDB Test - Stiffness/Homogeneity

- Stiffness distribution determines intrusion profile shape
- Are current elements representative of current fleets?
- Is only initial stiffness important?
  - little crush of bullet vehicle
  - issue for compatibility

DOTARS

IHRA

MDB Test - Kerb Mass

- European/Japanese fleet average mass of passenger cars is 1150-1200 kg
- US passenger car fleet 1415 kg
- US LTV fleet 1920 kg
- US Pass car/LTV fleet 1635 kg
- Europe may consider 1500 kg
  - US and Japan undecided

DOTARS

IHRA

MDB Test - Ground Clearance

- US want something representative of LTVs
  - perhaps 450 mm
- Rest of world will consider 350 mm
- Perhaps 350 mm ground clearance plus mandating design feature such as"blocker beams" in LTVs?
- Perhaps a worst case criteria?

DOTARS

IHRA

Pole Test

- Moving vehicle to pole test
- Perpendicular impact
- Impact speed 30 km/h
- Evaluate head and thorax(at least)
- Mid size male
- Rigid pole [350 mm] [FMVSS 201 = 254 mm]
  - try to load head and thorax simultaneously

DOTARS

IHRA

Out-of-position side airbag evaluation

- ISO TR 14933, NHTSA and Transport Canada and IIHS research
- NHTSA and Transport Canada to review current research

DOTARS

IHRA

Interior Headform Test

- Based on FMVSS 201 and new research from EEVC
- EEVC research to date confirms many aspects of FMVSS 201 test procedure
- Proposal to compare draft EEVC test procedure with FMVSS 201 to check for differences that might impede harmonisation.

DOTARS

IHRA

Non-Struck Side Impacts

- DOTARS, GM-Holden's, Monash Uni and Wayne State joint project to investigate non-struck side injuries
- Recent test comparing WorldSID (decoupled spine) with PMHS showed similar kinematics.

DOTARS

IHRA

Future Research

- Understand that IHRA is about coordinating harmonised research
- However, it is easier to focus on required research if desired regulatory outcomes are known
  - particularly if regional fleet dictates additional test requirements (eg SUVs)
- Seek guidance from SC's government regulators on this issue

DOTARS

IHRA

Future Research

- Determine the degree of harmonisation possible in the MDB test including examination of:
  - a worst case test using an MDB resembling an SUV or,
  - an MDB resembling a passenger car + an MDB resembling an SUV
    - additional test only for those countries with large SUV population

DOTARS

IHRA

Future Research

- Further research to define the test parameters of the MDB test
- How the MDB test, pole test and interior sub-systems test are likely to affect vehicle design to try and eliminate redundant tests to reduce the burden of testing
  - in validation phase

DOTARS

IHRA

THANK YOU

IHRA

DOTARS